

Green Building Project Fact Sheet
Beaulieu Residence
(Earth Sheltered/Hydrogen/Solar Electric)

Project	Project Address	10989 East Tusayan Trail
	Owner	Bryan Beaulieu
Team	City	Scottsdale, Arizona
	Latitude/Elevation	33° 30' North, 2540 ft above sea level
General	Architect	R. J. Bacon Company
	Builder	The Construction Zone, Ltd.
General	Floor Area	4000 ft ² livable, 2907 ft ² covered
	Time Line	Construction began in September 2003 and expected to be complete by Summer 2005.
Site Use	Minimal Impact	<ul style="list-style-type: none"> Building designed with minimal impact on site topography. Desert plants and natural features beyond 10' of building footprint and paved areas protected during construction.
	Heat Mitigation	<ul style="list-style-type: none"> Driveway and carport is constructed of permeable materials. Non-permeable walkways, uncovered patios, aprons, and driveways cover no more than 40% of the net buildable site area.
	Orientation	<ul style="list-style-type: none"> Home is oriented to the south for active and passive solar strategies.
	Outdoor Living	<ul style="list-style-type: none"> Home is designed with outdoor living in shaded courtyards and protected enclosures. Protected outdoor living area(s) is equal to at least 25% of total conditioned (indoor livable) space.
	Landscaping	<ul style="list-style-type: none"> Xeriscape is at least 90% of landscaped areas.
	Water Conservation	<ul style="list-style-type: none"> Non-sprinkler, zoned irrigation system with separate valving. Irrigation controller with rain sensor shut off. Rainwater collection and storage system for irrigation and cooling of outdoor living areas.
	Pollution Prevention	<ul style="list-style-type: none"> No chemical herbicides used on site. No chemical pesticides used on site.
Structural Elements	Air Quality	<ul style="list-style-type: none"> Utility supplied power on site at start of construction.
	Pollution Prevention	<ul style="list-style-type: none"> Non-asphalt based damp proofing installed at basement and/or retaining walls.
	Resource Conservation	<ul style="list-style-type: none"> Western coal fly ash concrete with min. 18% substituted volume. Floor structure is at least 75% non-solid sawn lumber unless from certified sustainable source. Roof structure is at least 75% non-solid sawn lumber unless from certified sustainable source. Beams and headers are at least 75% non-solid sawn lumber unless from certified sustainable source. Interior framing is at least 75% non-solid sawn lumber unless from certified sustainable source. Materials from regionally extracted resources. Products from regional manufacturers.

Building Envelope	Energy Conservation	<ul style="list-style-type: none"> ▪ Use of thermal mass design. ▪ Radiant barriers. ▪ All exterior doors insulated with min. R-2. ▪ Windows have NFRC Solar Heat Gain Coefficient [SHGC] of .40 or less. ▪ Exterior shading devices/screens with a shading coefficient of 0.45 or lower on windows. ▪ Skylights with an NFRC rating of U-0.5 or lower and SHGC of 0.40 or less. ▪ South glass has full exterior shading in May, June, and July at noon. ▪ Structures and/or landscaping provide summer sun control/shading on min. 50% of east and west wall surfaces.
Heating, Cooling, and Ventilation	Energy Conservation Indoor Environmental Quality	<ul style="list-style-type: none"> ▪ Evaporative cooling incorporated through site design and outdoor living areas. ▪ Computer controlled roof ventilators for airflow intake or exhaust depending on indoor and outdoor monitored conditions. ▪ Temperature controlled ceiling fans installed in every room. ▪ Stack and cross ventilation enabled through computer controlled operable windows. ▪ Passive solar design for winter heating. ▪ Ventilation system installed per ASHRAE standards. ▪ Passive radon ventilation system installed per EPA guidelines. ▪ All fans rated for 1.5 sone or less.
Electrical Power, Lighting, and Appliances	Energy Conservation	<ul style="list-style-type: none"> ▪ Daylighting allows natural light to enter the house from two sides of rooms in at least half of livable floor area. ▪ No recessed lights in insulated ceilings. ▪ At least 50% of total numbers of fixtures are non-incandescent. ▪ Maximum interior lighting wattage does not exceed 0.5 watts/square foot. ▪ Smart wiring system for lighting controls. ▪ Energy Star rated appliances. ▪ Gas dryer stub-out. ▪ Solar electric lighting for at least half of site lighting. ▪ Photovoltaic (8kW) solar electric power system with adjustable tilt for seasonal solar (altitude) angles. ▪ Hydrogen generating fuel cells (8kW) powered by solar electric.
Plumbing System	Water and Energy Conservation	<ul style="list-style-type: none"> ▪ Water heater within 20-pipe feet length of bathroom fixtures. ▪ Whole house insulated hot water recirculation system. ▪ Southern exposed roof area provided with plumbing for solar hot water system. ▪ Dual flush control toilets. ▪ Two pipe drain system for graywater recovery system.
Roofing	Resource Conservation	<ul style="list-style-type: none"> ▪ High durability/low maintenance earth sheltered roof system with min. 25% recycled content roof membrane and native desert vegetation.

Exterior Finishes	Resource Conservation	<ul style="list-style-type: none"> Locally derived materials. Regionally quarried and processed or cultured stone. Materials left in natural state.
Interior Finishes	Indoor Air Quality	<ul style="list-style-type: none"> Only low toxic, solvent-free adhesives, mastics, and sealants used for at least 75% of the home. Water based finishes on floors.
Interior Doors,	Resource Conservation	<ul style="list-style-type: none"> No tropical woods used. No wood base, cove, or door/window trim used.
Finish Floor	Resource Conservation Indoor Air Quality	<ul style="list-style-type: none"> Exposed stained concrete flooring. Rapidly renewable flooring materials. Combined hard flooring is 100% of conditioned floor area.
Pools and Spas	Energy and Water Conservation Occupant Health	<ul style="list-style-type: none"> Solar assisted pool and spa heating/cooling system. Retractable pool cover. Low-chlorine pool filtration system. Pool has zero water loss backwash system.
Solid Waste	Resource Conservation	<ul style="list-style-type: none"> Recycling and composting system.

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